

# Serious and Fatal Child and Adolescent Injuries in Alaska 1994-1998



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## INTRODUCTION



**Injuries are the leading cause of death for Alaska's children and adolescents - including injuries from vehicle and airplane crashes, drownings, fires, poisonings, and gunshot wounds.**

**Beginning at age one, more Alaskan children and adolescents die of injury than all other causes combined.**

**Injuries can be either intentional or unintentional - and many injuries can be prevented through simple measures such as smoke alarms, bike helmets, personal floatation devices, seatbelts, and supervising small children more closely.**



**Alaska, with its area of 591,000 square miles, is the largest state in the country.**

**The categories of injuries most prevalent in Alaska are closely related to the high-risk conditions and activities in the state.**

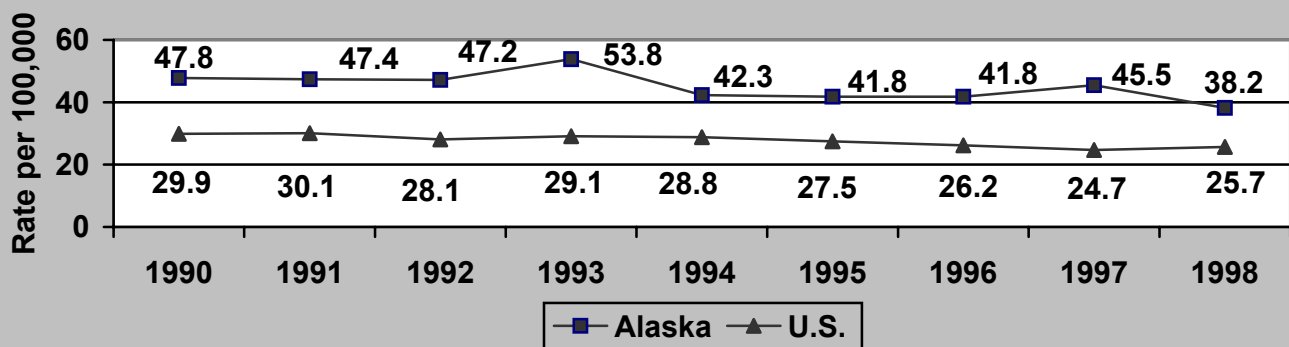


**Alaska has the highest mountains in North America, rugged wilderness, over 44,000 miles of coastline, and extreme weather conditions.**

## INTRODUCTION

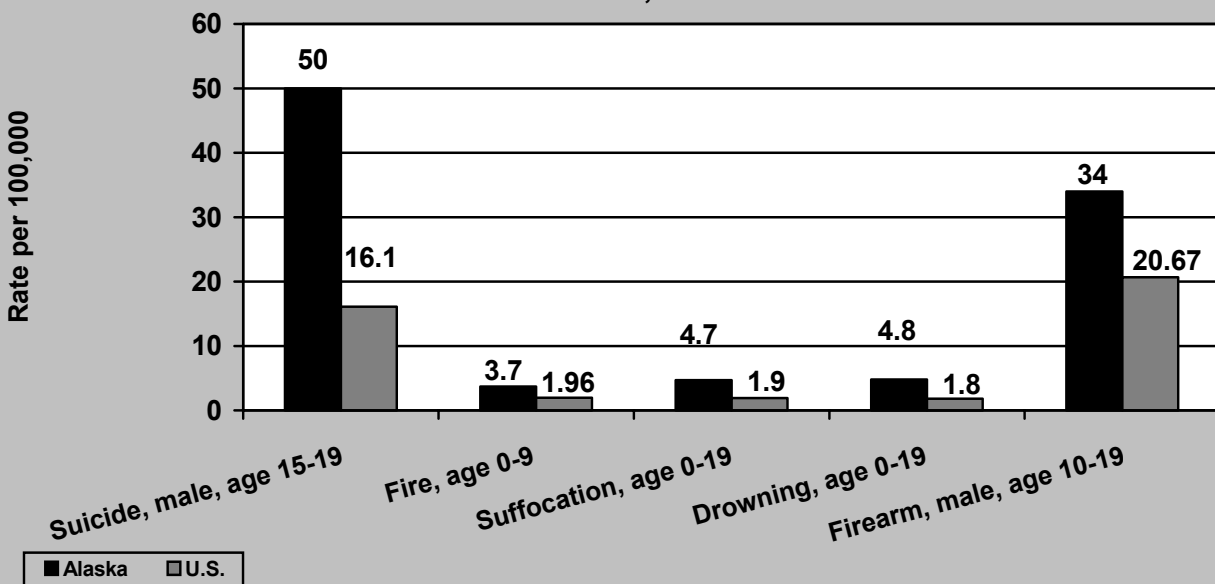
From 1980-1992, Alaska ranked first among the 50 states in child injury death rates. From 1990-1998, Alaska's rate decreased 20%, and its ranking dropped to fourth place. Alaska's rate still exceeds the comparable U.S. rate by an average of 63% (1994-1998), although Alaska's injury death rate has seen a decrease throughout most of the 90's (U.S. Centers for Disease Control and Prevention).

**Figure 1. Child Injury Death Rates,  
Alaska and U.S., 1990-1998**



The differences between Alaskan rates and U.S. rates are seen most conspicuously in the injury categories of suicide, fire, suffocation, drowning, and firearms.

**Figure 2. Child Injury Death Rates,  
Alaska and U.S., 1994-1998**



## POPULATION

This is a study of Alaska residents, ages 0-19, who were injured in Alaska during 1994-1998. Injuries included must have been serious enough to result in hospital admission for at least 24 hours, or death. For this analysis, *injury* encompasses blunt and penetrating trauma, burns, drowning, near-drowning, hypothermia, frostbite, poisoning and suffocation. The phrase “serious injury” in this publication refers to non-fatal injuries requiring hospital admission. Both unintentional and intentional injuries are included.



Population data were obtained from the Alaska Department of Labor. The target population during the five years of this study averaged 208,912 individuals per year. Five years of data have been combined for this study to reduce the effect of yearly variation on this relatively small population. Even so, further breakdown of the numbers by injury, age, or region often results in statistics too small to be meaningfully interpreted.

Data on injury fatalities were provided by the Alaska Bureau of Vital Statistics, and analyzed by the staff of the Section of Community Health and Emergency Medical Services (CHEMS) and the Data Evaluation Unit (DEU). Information on all injured persons requiring hospitalization was obtained from the Alaska Trauma Registry.

The **ALASKA TRAUMA REGISTRY** is a computerized information system maintained in the CHEMS section of the Division of Public Health, Alaska Department of Health and Social Services. It includes a detailed record of all injuries in the state among persons admitted to a hospital or declared dead in the emergency department. The data are collected from medical record files by hospital staff. Statewide data collection of traumatic injuries began in January, 1991. In Alaska, all 24 acute care hospitals participate in the registry. Consequently, the Alaska Trauma Registry has become a powerful tool for population-based surveillance of serious injuries in the state. Three separate validation studies have been performed to assess the sensitivity of the trauma registry in capturing appropriate cases. In 1994 a study including 11 hospitals yielded a case ascertainment rate of 91%. In 1998, validation studies were completed among six hospitals for a rate of 87%. In 1999, validation studies were completed at 11 hospitals, yielding a case ascertainment rate of 90%. More information about the Trauma Registry is available by contacting the Injury Surveillance and Prevention Program in the CHEMS office.

## INJURY DATA

The data in the Alaska Trauma Registry are abstracted from hospital medical records by a trained registrar who is a nurse or medical records employee for that hospital. Registrars are trained by the Lead Registrar who is on contract with the State of Alaska. The three largest hospitals, all located in Anchorage, employ trauma coordinators who collect trauma registry data concurrently and electronically transfer the data to the state CHEMS office each month. The remaining 21 hospitals send their trauma registry data worksheets to the Lead Registrar for computer entry.

Data on trauma victims who die without any hospital involvement were obtained from the Alaska Bureau of Vital Statistics. As required by law, the Alaska Bureau of Vital Statistics maintains records of all Alaskan deaths and obtains information via the death certificate.

## INTRODUCTION

For every child or teenager in Alaska that is fatally injured, about 13 are hospitalized due to a non-fatal injury, and many more seek medical help at emergency departments, clinics, and doctor's offices. Injury mortality is truly the tip of the iceberg, so to speak.

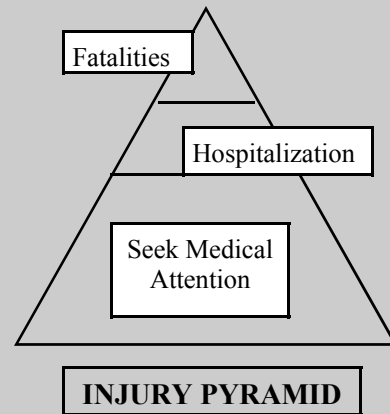


Figure 3. Alaska's injury pyramid.

Alaska is a land of abundant waters, rugged terrain, and extreme climates. Alaskans rely on a variety of transportation methods - boats, small planes, snowmobiles, and all-terrain vehicles - for travel within the state. Cold, darkness, ice, and vast distances between communities contribute to travel risk. Access to medical care is limited in rural areas. The need for home heating devices increases the risk of fire and inhalation injuries. Recreational and subsistence hunting mean that firearms are readily available, increasing the risk of unintentional injuries, as well as homicide and suicide deaths. Social and cultural attitudes about danger and risk-taking may also play a part in contributing to the high rate of injuries and injury death. Alaskans who grew up in the state may be accustomed to a greater risk of injury and death, and less inclined to protect themselves and their children (Healthy Alaskans 2010).

## ACKNOWLEDGMENTS

Special recognition for the preparation of this report is due to:

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- The Microsoft Network for its superb clipart gallery and useful photos.





## DEFINITIONS

### E-CODES

The injury categories used in this report are from the external cause of injury codes (E-Codes) of the International Classification of Diseases – 9<sup>th</sup> Edition (ICD-9).

The E-Code classification system describes the mechanism of an injury event. Many Alaskan hospitals routinely record these codes in the medical record file of an injury patient. All uncoded entries are assigned an E-Code by the Trauma Registrar or by the Trauma Registry Coordinator, and further verified using the injury description narrative included on the worksheet. All injury deaths from the Alaska Bureau of Vital Statistics are E-coded.

### HEAD INJURIES

When head injury is mentioned in this study, it refers to traumatic brain injury as defined by the Centers for Disease Control and Prevention, i.e. fractured skull or intra-cranial injury. It does not include superficial injuries such as scrapes, cuts, and bruises.

### DISABILITY

A trauma registry patient is designated “disabled” if at the time of discharge the information in the medical record file convinces the registrar that this individual will not fully recover to his or her pre-injury level of function.

### ALCOHOL INVOLVEMENT

Alcohol involvement is defined as suspected alcohol use by the injured patient. This determination is based on medical record information and is answered in the affirmative if the registrar notes any subjective or objective documentation to this effect. Documentation includes the results of a blood alcohol test, health care provider notes, or the ambulance report.

### ABBREVIATED INJURY SCALE (AIS)

The AIS was developed by a national committee on automotive safety to rate traumatic injury severity to each of five body systems. The scaling system ranks injury as follows: 1) minor; 2) moderate; 3) serious; 4) severe (life threatening); 5) critical; and 6) unsurvivable. Not all cases are assigned an AIS score. An AIS score is not applicable for drowning, suffocation, or poisoning events. In some cases, an AIS score was not calculated because the diagnosis code assigned was not specific enough for automated AIS scoring.

### HOSPITAL CHARGES

Since only 50% of the hospitals complete the trauma registry question asking for the actual charges billed for the hospitalization of a trauma patient, the cost information given in this report is based on averages. Information on the payer billed, however, is collected on all trauma registry patients and is a useful indicator of who bears the cost of injury in Alaska.



The Alaska Native Medical Center in Anchorage



## INJURY DESCRIPTION NARRATIVE

The Trauma Registrar completes an injury narrative on the circumstance of the injury. Two examples of such a narrative are:

- Flame burns following explosion of a paint can thrown into fire by neighbor child.
- Child sitting in front of driver of snow machine, going 5 MPH over an embankment, child fell off and machine ran over him.



**MOTOR VEHICLE** injuries are split up into four distinct groups: injuries to occupants of motor vehicles on the highway; injuries to occupants of motor vehicles off the highway; bicycle injuries (which include those without motor vehicle involvement); and, pedestrian injuries.

**WATER TRANSPORT** injuries include all injuries that are incurred on a watercraft, with or without collision of the boat, but excluding drowning and near-drowning.



**AIRPLANE** injuries are all injuries that occur in an airplane, with or without a crash, including boarding and alighting.

**FOREIGN BODY** injury refers to injury resulting from a foreign object becoming lodged in an orifice of the body not including the eye or aspiration into the airway. Almost invariably, this refers to swallowing a foreign object, which is common among infants and toddlers.

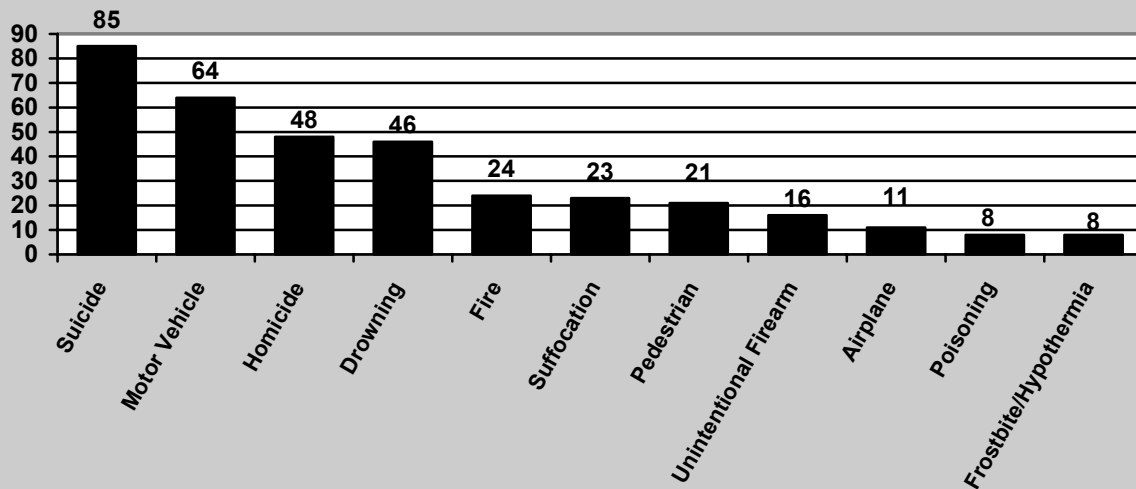
**OTHER ANIMAL** injury refers to any animal-inflicted injury, excluding dog bites and injuries incurred while riding an animal.

Unintentionally **STRUCK BY OBJECT OR PERSON** and **CAUGHT BETWEEN OBJECTS** are E-Code classifications that are not specific enough to be useful in describing major injury categories. Therefore, they are not included in graphs which show the top injury categories.

## OVERVIEW

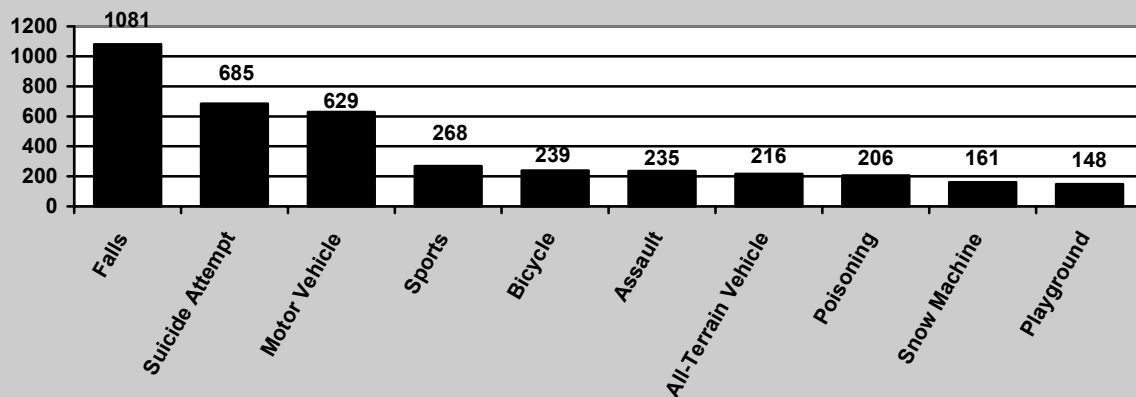
From 1994-1998, 401 Alaskan youth, age 0-19, died of injuries, or about 80 per year. The top ten fatal injury categories during this time period are shown in Figure 4. (Source: Alaska Bureau of Vital Statistics.)

**Figure 4. Child Injury Fatalities,  
Top Ten Categories in Alaska, 1994-1998**  
N=401

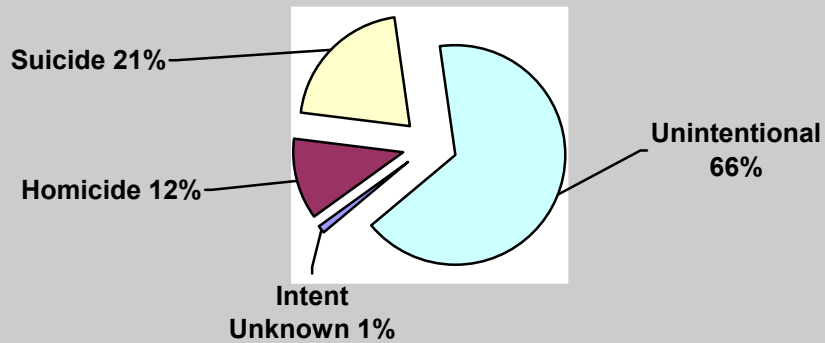


Non-fatal hospitalized injuries numbered 5,255 for the five-year period. The top ten categories are shown in Figure 5. (Source: Alaska Trauma Registry).

**Figure 5. Child Non-Fatal Injury Hospitalizations  
Top Ten Categories in Alaska, 1994-1998**  
N=5,255

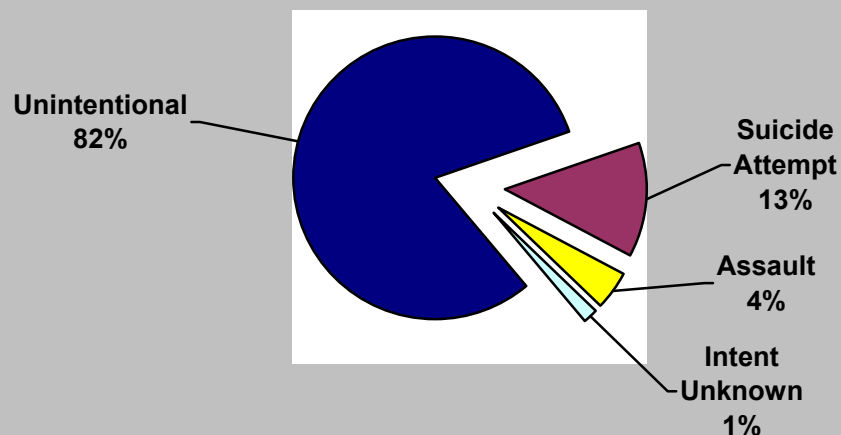


**Figure 6. Injury Fatalities, Age 0-19, 1994-1998**  
**N=401**



Of the injury deaths, 66% were unintentional, 21% suicide, and 12% homicide.

**Figure 7. Injury Hospitalizations, Age 0-19, 1994-1998**  
**N=5,255**

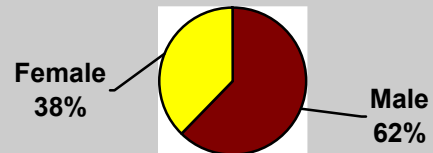


Of the non-fatal hospitalized injuries, 82% of the injuries were unintentional, 13% were suicide attempts, and 4% were assaults.

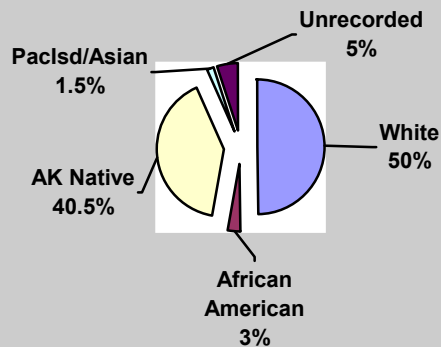
# OVERVIEW

Nearly two-thirds (62%) of the fatal and non-fatal injuries from 1994-1998 occurred to males.

**Figure 8. Serious and Fatal Injuries by Gender, Ages 0-19, 1994-1998, N=5,656**



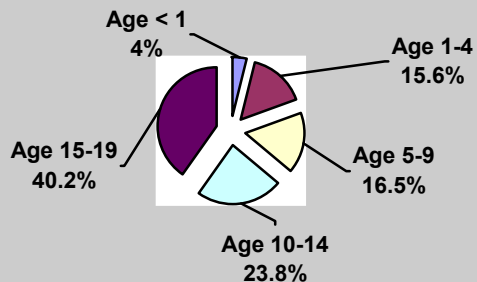
**Figure 9. Serious and Fatal Injuries by Race, Ages 0-19, 1994-1998, N=5,656**



Alaska Natives under age 20, who made up approximately 22% of the study population, were involved in about 41% of the fatal and non-fatal injuries.

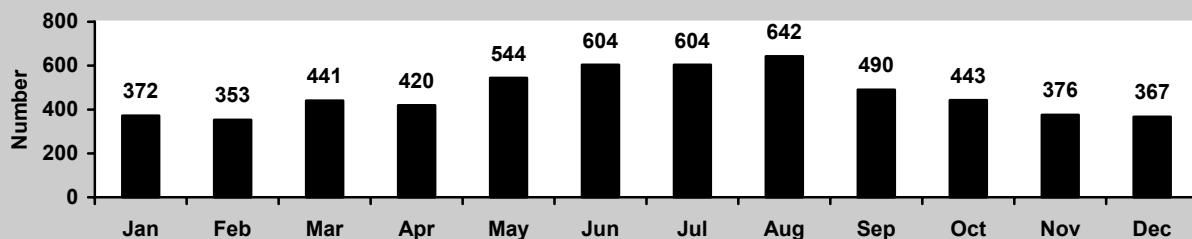
The majority of the serious and fatal injuries occurred in the 15-19 age group (40%).

**Figure 10. Serious and Fatal Injuries by Age Group, Ages 0-19, 1994-1998, N=5,656**



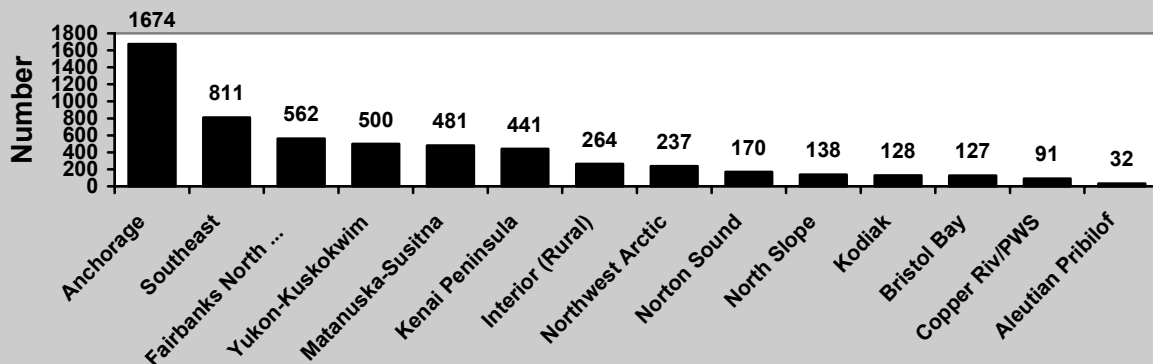
Injuries peaked in the summer months.

Figure 11. Serious and Fatal Injuries by Month, Age 0-19, 1994-1998, N=5,656



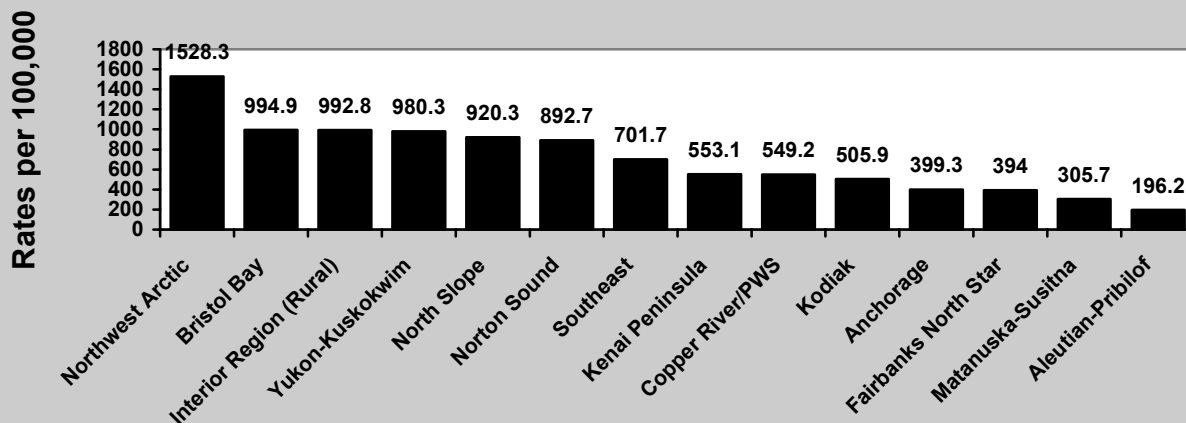
Thirty-one percent of the injuries occurred to residents of the Municipality of Anchorage.

Figure 12. Serious and Fatal Injuries by Region and Sub-Areas, Age 0-19, 1994-1998, N=5,656



Rates were highest in rural areas.

Figure 13. Serious and Fatal Injury Rates by Region and Sub-Areas, Age 0-19, 1994-1998 (per 100,000)



# UNINTENTIONAL INJURIES

Falls were the leading cause of injury hospitalization for Alaskan children and youth from 1994-1998.

## FALLS

(ICD-9 Code E880.0-E883.9, E884.1-E885, E886.9-E888)

Fall injuries include all falls except those involving a vehicle, watercraft, aircraft, playground equipment, or organized sports. Included in this category are falls on stairs and ladders, from buildings or furniture, from one level to another, and slipping or tripping. Also included in this category are shower and bathtub falls, and falls while engaging in the activities of dancing, gymnastics, martial arts, snowboarding, skating, skateboarding and skiing. The injury narrative from the Alaska Trauma Registry allows for more precise identification of types and circumstances of fall injuries.

The highest fall injury rates occurred to infants and children under age 5. Young children under age five are particularly prone to falls because they tend to be less coordinated and their heads are large in proportion to their bodies, making them top heavy. Although falls are rarely fatal among children, they can have serious consequences for small children and infants. Falls were the leading cause of non-fatal traumatic brain injury for Alaskans from birth through 19 years of age.

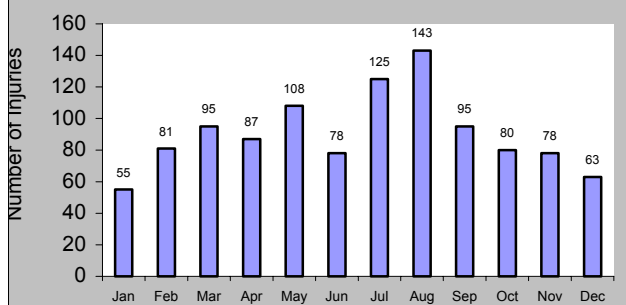
Of children under age 5 who were admitted to a hospital because of a fall, about 31% fell from household furniture (chairs, beds, counters, tables, etc.). About 9% fell on stairs and approximately 8% fell out of windows or off decks, porches, or balconies. Just over 7% were dropped by a parent, sibling, or babysitter.



For youth ages 15-19, hazardous lifestyles and risk-taking behaviors become more common. The great majority of fall injuries within this age group involved outdoor activities including hiking, skiing, snowboarding, roller-blading, skating, and skateboarding. Approximately 7% of the fall injuries to this age group involved alcohol.

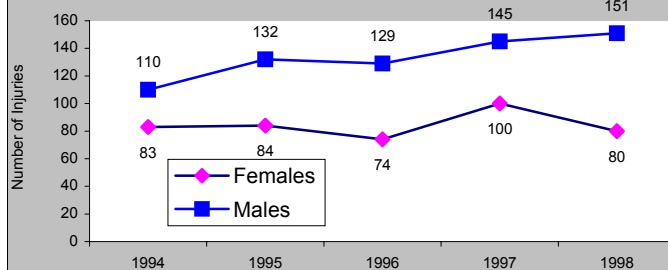
Fall injuries were highest in July and August.

Figure 14. Fall Injuries by Month, 1994-1998, N=1,088



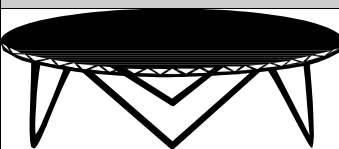
Over the five year study period, fall injuries occurring to males continued to increase, while fall injuries to females remained almost the same.

Figure 15. Falls by Year, 1994-1998



Trampolines accounted for about 5% of fall injuries to children and adolescents from 1994-1998.

The American Academy of Pediatrics has recommended that trampolines never be used at home, on playgrounds, or in gym classes. Following are examples of injury description narratives from the Alaska Trauma Registry:



"Patient jumping on trampoline and fell between springs."

"Patient doing flips on trampoline and landed on head with flexed neck."



## MOTOR VEHICLE TRAFFIC

(ICD-9 Code E810-E819, ext: .0, .1, .2, .3, .4, .8, .9)

A motor vehicle traffic injury refers to an injury sustained by the occupant of a motor vehicle on the highway (cars, trucks, etc.). Most of these injuries are the result of a collision or loss of control.

A few injuries occur as the occupant is boarding or alighting; as a result of falling from the vehicle; or, by fire, explosion, moving object, momentum, or noxious fumes.

Injury to occupants of cars, trucks, and motorcycles, usually as the result of a collision, was the deadliest of unintentional injuries overall (almost 13 deaths per year), and the second leading cause of injury hospitalization (over 125 admissions per year) for Alaskans 0-19 years of age.

Motor vehicle injuries on the highway accounted for about 16% of the injury deaths for children and teens in Alaska and 12% of all hospitalized injuries. Not surprisingly, the majority of the collisions occurred in the urban areas and along Alaska's major highway system that extends from Fairbanks down to Homer, through the Copper River Valley, and northeast to Tok and Haines. Motor vehicle crashes were the most frequent cause of injury to children and teens (26%) in the Mat-Su Borough.

For teens ages 15-19, motor vehicle traffic crashes were the leading cause of unintentional injury hospitalization and death. Teens in this age group accounted for 72% of the fatal and hospitalized motor vehicle crash injuries occurring to all Alaskan children and youth. In 20% of the crashes resulting in the hospitalization of youth ages 15-19, alcohol involvement was noted.

Motor vehicle traffic crashes were the leading cause of fatal traumatic brain injury for Alaska's children and youth during the five year study period.

Seat belt use is typically lowest among young people ages 15-19 according to the National Highway Traffic Safety Administration (NHTSA). In Alaska, 54% of the youth in this age group who were hospitalized for motor vehicle injuries were reported as not wearing a safety belt. An additional 10% may fall into this category, as safety belt use at the time of injury was not recorded.

Forty-one percent of Alaskan children ages 14 and under, who died or were hospitalized as a result of a motor vehicle traffic crash, and for whom safety equipment use was recorded, were not restrained by safety belts or safety seats.

When properly installed in passenger cars, child safety seats reduce fatal injury by 71% for infants (younger than one year old), and by 54% for toddlers (between 1 and 4 years of age) according to the National Highway Traffic Safety Administration.

***Alaska state law requires all children and adults to be restrained by safety belts and safety seats. For children under age 16, this is a primary enforcement law, meaning a driver can be stopped and ticketed for this infraction alone. The fine is \$50.***

Operators under the age of 18 and all passengers are required by law to wear helmets when riding motorcycles in Alaska.



The Alaska Trauma Registry data show that 35% of the motorcycle crash victims under 18 were reported to have been without a helmet. Helmet use was not documented in 22% of the cases.

Data from 1991-1998 shows that unhelmeted motorcyclists are three times as likely to sustain a serious head injury as helmeted motorcyclists (Odds ratio = 2.99, 95% Confidence Interval = 1.03,8.57. (Source: Alaska Trauma Registry)



# UNINTENTIONAL INJURIES

**BICYCLE**  
(ICD-9 Code E810-  
E825, Ext. .6;  
E826-829, Ext. .1)

Bicycle injuries can occur as the result of a collision with a motor vehicle, with another object or person, or from loss of control. Bicycle crash injury was the second leading cause of non-fatal injury hospitalizations for children ages 5-14.

About 49 children were admitted to a hospital each year with bicycle crash injuries, and five children (ages 5-14) were fatally injured in Alaska from 1994-1998. All of the fatalities resulted from bicycle crashes with motor vehicles. Trauma registry data showed that 32% of the non-fatal injuries were classified as serious, severe, or critical on the Abbreviated Injury Scale.

Males were more than twice as likely as females to be involved in a bicycle crash. In the Prince William Sound/Copper River region, bicycle injuries were the third leading cause of unintentional injury hospitalizations, and in Anchorage, the Matanuska-Susitna Borough, and Southeast regions, bicycle injuries were the fifth leading cause of unintentional injury hospitalizations.



The National Safe Kids Campaign states that "bicycle helmets have been shown to reduce the risk of head injury by as much as 85%."

Thirty-three percent of the hospitalized bicycle injury patients under age 20 sustained a head injury, and two of the bicycle injury fatalities were due to traumatic brain injuries. Bicycle injury was the third leading cause of non-fatal traumatic brain injuries for young people under age 20 in Alaska.

Reported helmet use among injured bicyclists was very low during the study period. Only 7% were reported to have been wearing a helmet at the time of injury. Forty-eight percent did not wear a helmet, and for 41% of the incidents, this information was not recorded.



According to the Centers for Disease Control and Prevention, public health officials now realize that in addition to promoting helmet use, safety officials must teach good riding skills, promote good driving practices, and create safer places for people to ride.



Bike rodeos, helmet giveaways, and continuous parent participation in teaching basic bicycle safety skills and rules of the road are all essential in the prevention of serious and fatal bicycle injuries to Alaska's children.



A bicycle is considered a vehicle by the State of Alaska and must obey all the motor vehicle traffic laws such as signaling before turning and riding in the same direction as the traffic flow.



**OFF-ROAD  
TRAFFIC**  
(ICD-9 Code E820-  
E821,  
Ext. .0, .1, .8, .9)

An off-road vehicle is a snow machine or an all-terrain vehicle. An injury resulting from a collision of an off-road vehicle with a motor vehicle on the highway is counted as a motor vehicle traffic injury. Injuries or deaths resulting from an off-road vehicle crashing through thin ice may be classified as hypothermia or drowning.



Over 75 youth, ages 0-19, were hospitalized annually from an off-road motor vehicle injury, and a total of 11 died over the five year study period. Injuries associated with snow machines and all-terrain vehicles were the fourth leading cause of injury hospitalization and death for all Alaskan children, and the third leading cause of unintentional injury hospitalization in the 10-19 age group. Even younger children are at risk. There were 24 children ages 0-4, and 37 children ages 5-9, hospitalized because of an injury sustained while on an off-road vehicle during the study period.

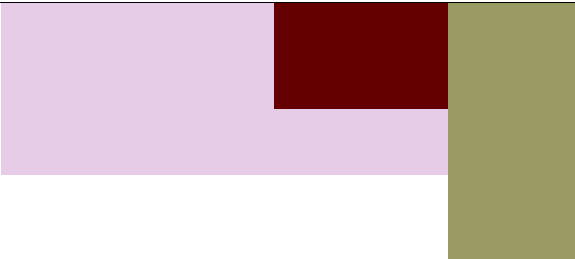
In the rural areas where off-road vehicle use is widespread, risk of injury is high. In Bristol Bay and the North Slope Borough regions, all-terrain vehicles were the second leading cause of fatal and non-fatal injuries; and in Kodiak, Northwest Arctic, and the Norton Sound regions, they were the third leading cause of injury hospitalizations.

Helmet use on off-road motor vehicles is historically very low. According to the Alaska Trauma Registry, only 19% of the children injured in off-road vehicle crashes were reported to be wearing helmets, and in 45% of the incidents, medical records reported that no protection was worn. In 36% of the cases, no information on helmet use was recorded.



Statistics from the trauma registry rank fatal and non-fatal off-road vehicle injuries to young Alaskans as the third most common cause of head injury. Twenty-two percent of children and youth hospitalized after off-road vehicle crashes were diagnosed with a head injury. Alcohol use was suspected in about 12% of the off-road vehicle crashes.

The typical mechanisms of injury on all-terrain vehicles were vehicle overturning, rider ejection, or rider falling off and being struck by the vehicle. Snow machine injuries often occurred when the snow machine collided with an object or another vehicle, or when the rider was ejected. Another common cause of injuries was falling out of a sled being towed by a snow machine.



# UNINTENTIONAL INJURIES

## DROWNING/ NEAR DROWNING

(ICD-9 Code  
E830.0-E830.9,  
E832.0-E832.9,  
E910.0-E910.9)

The second deadliest unintentional injury category for Alaskan children and youth was drowning, which claimed an average of nine young lives per year. Over 40% of the 46 drowning victims were in the 15-19 year old age group. Near-drowning, however, did not account for a large number of hospitalizations.

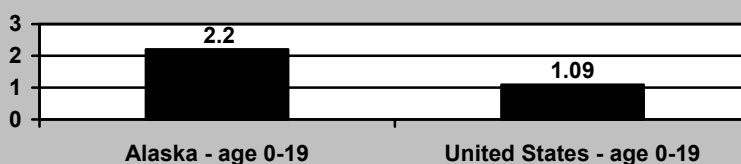


## FIRE

(ICD-9 Code  
E890.0-E899.9)

Ranked third deadliest in unintentional injury was fire. The fire death rate in Alaska is more than twice the national average for children 0-19. Alaska's children ages 1 through 4 were most at risk.

**Figure 16. Residential Fire Death Rates per 100,000, 1994-1998**



Of the 25 house fire injuries listed in the trauma registry over the five year period, six specifically mentioned in the injury description that the house fire involved a trailer. There were 38 fire injuries caused by the ignition of flammable liquid (gasoline, lighter fluid, paint thinner, etc.). An additional 11 injuries involved candles, matches, and cigarette lighters.

## SUFFOCATION

(ICD-9 Code  
E911-E913.9)

Suffocation can mean mechanical suffocation or aspiration of a foreign object.

Suffocation was the leading cause of injury death for infants under one year of age and the fourth leading cause of injury death for children age 1-4. Thirty-eight percent of the suffocation deaths were bed-related incidents such as "child trapped between mattress and wall." (Alaska Bureau of Vital Statistics)

Three to four infants a year died from suffocation, and four to five infants and children under age 5 were hospitalized. Most of the children who were hospitalized due to suffocation aspirated a small object and 40% of the time the object was food (nuts were the most common).

## SWALLOWING FOREIGN OBJECTS

(ICD-9 Code E915)

Although there were no fatalities, swallowing small objects put an average of 11 infants and small children into the hospital each year from 1994-1998.



58% of the time the object swallowed by an infant or small child was a coin.

**BURNS**  
(ICD-9 Code  
E924.0-E926.9)

This category includes hot substance burns and electrical burns, but not those from fire or flames. Burns were the third leading cause of injury hospitalization for Alaskan children ages 0-4.



The majority of burns to children under 5 were “hot liquid” burns. A very typical scenario involves an infant or toddler pulling a cup, pot, or kettle of a hot liquid onto him or herself. Also, adults carrying or holding a container of hot liquid in their hands sometimes spill it on small children

who get under foot. These types of burn injuries occur in both urban and rural Alaskan homes. Over 70% of the narrative descriptions in this injury category specifically mentioned burns due to hot liquids as the cause of injury.

**POISONING**  
(ICD-9 Code  
E850.0-E869.9)

Poisoning encompasses drug overdose, recreational drugs, poisonous gases, caustic agents, and poisonous foods and plants. Unintentional poisoning was the second leading cause of injury hospitalization, after falls, for children ages 0-4, and was responsible for the hospitalization of 133 children in the under-5 age group during the five year study period. Over 63% of these incidents involved the child getting into medications. Most often the medications belonged to a relative living in or visiting the home, or with whom the child was visiting. Eleven of the injury descriptions specifically mentioned vitamins as the poisonous substance. Another 26% of the hospitalizations were due to children consuming poisonous substances around the house (lamp oil, cleaners, petroleum products, cosmetics, or other household products). Carbon monoxide poisoning was a factor in 8% of the 203 poisoning hospitalizations for children and youth ages 0-19.

The United States Congress passed legislation in February 2000 to stabilize and enhance a national system of Poison Control Centers. The Poison Control Center Enhancement and Awareness Act, Public Law 106-174, establishes a toll-free telephone line, a nationwide public education campaign, and provides funding to certified poison control centers to help maintain their essential capabilities.

**Alaska's Poison  
Control Center  
phone number is:  
800-222-1222.**

**PEDESTRIAN**  
(ICD-9 Code E810-  
E825, Ext. .7; E826-  
E829, Ext. .0)

A pedestrian injury refers to anyone on foot who is injured by any vehicle on the highway or off-road. The second leading cause of injury death for children ages 1-4 occurred as a result of being hit by a motor vehicle.

An average of 21 children a year, ages 1-14, were hospitalized after being hit by a motor vehicle. The most common circumstance of a small child being hit by a vehicle was one in which the child was not seen by the driver and was backed over. Another frequent event involved children running out into the street. Almost two-thirds of the pedestrian injuries occurred to males.



Pedestrian injuries were the second leading cause of unintentional fatal traumatic brain injuries (after motor vehicle crashes) for Alaska's children and youth, and were the fifth leading cause of fatal and non-fatal injuries in the North Slope Borough during the five year study period.



## UNINTENTIONAL INJURIES



### **DOGBITE** (ICD-9 Code E906.0)

Dogbite injuries occurred most commonly to children ages 1-9, but were especially prevalent among the 1-4 age group. Several infants and young children have died in Alaska as a result of being mauled by a dog. The frequency of dogbite injuries was highest in rural, predominantly Native regions, especially the Rural Interior, Northwest Arctic, and the Yukon Kuskokwim regions.

Children presenting with dogbite injuries were often bitten by a familiar dog; in many cases this was a family dog, a neighbor's dog, a dog in a sled dog lot, or a dog protecting her pups. Of the dogbite injuries entered into the trauma registry, 35% were to the face, head, or neck of the child. Facial injuries from dog bites can result in permanent disfigurement.

### **FALL FROM PLAYGROUND EQUIPMENT** (ICD-9 Code E884.0)

About 30 children ages 0-14 were hospitalized each year after falling from equipment on the playground. There were no fatalities. This type of injury occurred most frequently among children ages 5-9 (65.5%), and was the second leading cause of injury hospitalization for this age group. Playground falls were the fifth leading cause of injury in the Kodiak Island region.

The most common sites for playground fall injuries were school playgrounds, particularly in urban areas and on military bases. Seventeen children (11.5%) suffered a head injury during a fall from playground equipment. The 148 serious falls from playground equipment were distributed as follows:

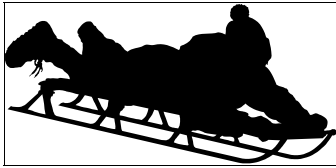
Playground Equipment	Number of Hospitalizations	Percent
Monkey Bars/Jungle Gym	59	40%
Swing	35	24%
Slide	25	17%
Other	29	19%



Figure 17. Playground Falls, 0-14, 1994-1998, N=148

### **CUTS** (ICD-9 Code E920.0-920.9)

Over 25 children and teens ages 1-19 were hospitalized each year due to injuries caused by sharp instruments. One teenager was fatally injured. Males were injured almost twice as often as females over the five year study period. Cuts were not a leading cause of injury hospitalization for any age group, although this category did rank as the fourth leading cause of injury in the Yukon-Kuskokwim region and fifth in the Northwest Arctic region.



**SLEDDING**  
(ICD-9 Code E848)

Sledding injuries hospitalized about 17 children ages 1-19 each year. Thirty percent of all sledding injury patients under age 20 suffered a head injury, which is a 5% increase from the 1991-1994 study period. Sledders were injured by crashing into trees, cars, rocks, or stumps.

**SPORTS**  
ICD-9 Code E886.0, E917.0, E927-sports)

Included in the sports grouping are organized and team sports such as football, basketball, wrestling, baseball, softball, hockey, and soccer. Injury may occur by falling, being struck by an object or other person, or body strain.

Organized and team sports were responsible for 268 injury hospitalizations in 1994-1998. There were no deaths. Sports injuries were most common for ages 10-19. There were 23 head injuries resulting from sports-related incidents. Males were five times more likely than females to be hospitalized with a sports injury. Sports injuries were the fourth leading cause of injury in the Southeast and Fairbanks NSB regions, and the fifth leading cause of injury in the rural Interior, Kenai Peninsula, and Norton Sound regions. The distribution of injuries among the various sports is shown in Figure 19.



Sport	Number of Hospitalizations	Percent
Basketball	89	33%
Football	44	16%
Wrestling	35	13%
Baseball/Softball	32	12%
Hockey	24	9%
Soccer	23	9%
Other	21	8%

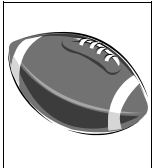


Figure 18. Sports Injuries, 0-19, N=268

*“Many of these sports injuries can be prevented if parents get involved and make sure their children wear protective gear, follow the rules of play, and are physically and emotionally prepared to play the sport.”*  
(SAFE USA, Centers for Disease Control and Prevention, 2001).



## INTENTIONAL INJURIES

### HOMICIDE/ ASSAULT (ICD-9 Code E960.0 - E968.9)

Forty-eight of Alaska's children and youth died as a victim of homicide during 1994-1998, and 235 were hospitalized due to assault. Eleven of the deaths were infants and children under five years of age; which made this the fifth leading cause of injury death for that age group.

The age distribution of children who were battered or abused (according to the Alaska Trauma Registry data) is shown in Figure 20.

Assault was the second leading cause (after falls) of fatal and non-fatal injury hospitalization for infants under one year.

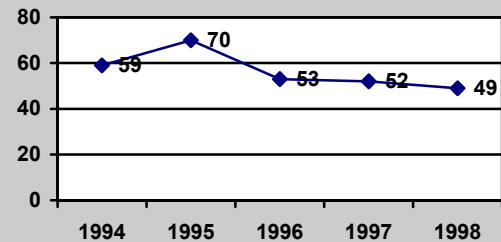
Twenty-nine youth ages 15-19 were victims of homicide from 1994-1998, and 149 were hospitalized due to assault, making this the third leading cause of injury deaths and hospitalizations for this age group. Thirty-five percent of the incidents involved alcohol.

Native American children and youth were more likely to be assault or homicide victims. Males were more than twice as likely to be assaulted as females.

Assault was the fourth leading cause of both injury hospitalization and death among Anchorage children and adolescents. Of the 283 incidents involving 15-19 year old teens in the five year study period, 178 (63%) occurred in Anchorage. In no other region was assault among the top five injury categories.

Except for 1995, assault injuries and homicides declined during the five year study period.

**Figure 19. Fatal and Non-Fatal Assault Injuries, 1994-1998**



Age	Number of Hospitalizations	Percent
Under 1	15	62.5%
1-5 years	7	29.2%
6-14 years	2	8.3%
Total	24	100%

Figure 20. Battered or Abused Injury Age Distribution, 0-14, 1994-1998, N=24

**Figure 21. Assault Types, 0-19, 1994-1998, N=235**

Non-Fatal Assaults	Number of Hospitalizations	Percent
Brawling/Fights	58	24.7%
Stab Wounds	31	13.2%
Gunshot Wounds	36	15.3%
Child Battering/Abuse	24	10.2%
Other/Not Specified	86	36.6%



**SUICIDE/  
SUICIDE  
ATTEMPT**  
(ICD-9 Code E  
950-959)

The deadliest injury category for Alaskan youth from 1994-1998 was suicide, with a loss of 85 lives. During those years, there were 685 children and adolescents hospitalized after suicide attempts. Trauma registry data showed suicide attempts generally begin around age 12. There were five attempts and one fatality in the 10 and under age group. The most prevalent age for suicides and suicide attempts was 15, though the numbers were high from age 14 through 19. Figure 22 below shows the age distribution.

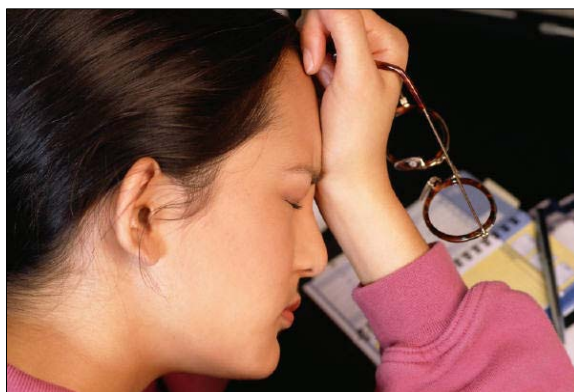
Alaska Native youth from 10 through 19 were the most likely to attempt or complete suicide (51.9%). Trauma Registry data show females were more than twice as likely to attempt suicide than males (71.9%); however, males were more likely to complete suicide (80%).

Suicidal injuries were the number one cause of fatal and non-fatal injuries in the Fairbanks NSB, Interior (Rural), Northwest Arctic, Norton Sound, and Yukon-Kuskokwim regions. Suicidal injuries were in the top five injury categories for all 14 EMS regions in Alaska (see page 30, Injuries by Region).

Figure 22. Suicide Injuries by Age

Age	Fatal & Non-Fatal
6 years	1
7 years	1
8 years	2
9 years	1
10 years	1
11 years	5
12 years	27
13 years	59
14 years	93
15 years	118
16 years	114
17 years	105
18 years	82
19 years	85
(Alaska Trauma Registry data)	

Poisoning was the most common method of suicide attempt, while firearms were the most common means used in completed suicides. According to Alaska Trauma Registry narrative data, poisoning was the most common method used by females (three times more often than by males). The most common agent for overdose suicide attempts was acetaminophen (Tylenol) which was used 26% of the time. Alcohol was involved in 17% of the suicides or suicide attempts.



The most frequent reasons for suicidal actions recorded in the medical records were family problems, relationship problems, and/or depression.

## FIREARM INJURIES

ICD-9 Code  
E922.0-E922.9;  
E955.0-E955.4;  
E965.0-E965.4;  
E985.0-E985.4)

Firearm injuries are a leading cause of serious and fatal injuries to children and youth in Alaska. In this report, gunshot wounds among children and teens in Alaska were categorized as unintentional, suicides, assaults, and those with intent unknown.

Figure 23 shows the number of serious and fatal child and adolescent firearm injuries in Alaska, by intent. Although there were a similar number of unintentional firearm injuries compared to suicidal firearm injuries (91 and 94, respectively), there were only 16 unintentional firearm injury deaths compared to 62 suicides. The percent of cases that were fatal among the unintentional firearm injuries was 18%, compared with the percent fatalities among suicide attempts at 66%. Of the 90 fatal firearm injuries to youth in the 15-19 age group, 64% were suicides.

**Figure 23. Serious and Fatal Firearm Injuries by Intent, Age 0-19, 1994-1998, N=267**

	# Serious (Non-Fatal Hospitalized)	# Fatal	Total	% of Total
<b>Intent</b>				
Unintentional	75	16	91	34.1%
Suicide/Attempt	32	62	94	35.2%
Homicide/Assault	36	33	69	25.8%
Legal Intervention	1	0	1	0.4%
Intent Unknown	11	1	19	4.5%
<b>Total</b>	<b>155</b>	<b>112</b>	<b>267</b>	<b>100%</b>

*Serious and Fatal Firearm Injuries Among Children and Adolescents in Alaska: 1991-1997*, a comprehensive study of firearm injuries and deaths in Alaska published in *Alaska Medicine* (Mark Johnson, et al., Jan/Feb/Mar, 2000 issue), suggested that many children and adolescents in Alaska who were injured themselves by firearms, or who caused injury to other children or youth by firearms, had easy access to them. The study concluded that efforts should be made to convince adults not to let children or at risk teenagers have unsupervised access to firearms, to promote safe storage of firearms, and, if older youth have access to firearms, they may need more firearm safety training.

Figure 24 shows the number of serious and fatal firearm injuries for each of four age groups in Alaska. Among children 0 through 9 years of age, there were 16 serious or fatal injuries (averaging about 3 per year); for children 10 through 14 years of age, there were 52 serious or fatal injuries (averaging about 10 per year); and for adolescents 15 through 19 years of age, there were 199 serious or fatal injuries (averaging about 40 per year). For children ages 0-14 years old, the majority of the injuries were unintentional. However for youth ages 15 through 19 years, the largest percentage of serious or fatal injuries were suicides or suicide attempts (42%), followed by homicide/assaults (29%).

**Figure 24. Serious and Fatal Firearm Injuries by Age Group and Intent, Age 0-19, 1994-1998, N=267**

Age Group	0-4 (#Fatal)	5-9 (#Fatal)	10-14 (#Fatal)	15-19 (#Fatal)	All Age Groups (#Fatal)
<b>Intent:</b>					
Unintentional	5 (1)	1 (4)	26 (5)	43 (6)	75 (16)
Suicide/Attempt	0 (0)	0 (0)	6 (4)	26 (58)	32 (62)
Homicide/Assault	1 (1)	0 (2)	3 (4)	32 (26)	36 (33)
Legal Intervention	0 (0)	0 (0)	0 (0)	1 (0)	1 (0)
Intent Unknown	0 (0)	1 (0)	3 (1)	7 (0)	11 (1)
<b>Total (No. Fatal)</b>	<b>6 (2)</b>	<b>2 (6)</b>	<b>38 (14)</b>	<b>109 (90)</b>	<b>155 (112)</b>

Figure 25 shows the incidence of occurrence of serious and fatal firearm injuries in 14 different regions in Alaska. Rates were highest in the rural areas of the state, ranging from 120/100,000 in the North Slope Borough region to 56/100,000 in the Rural Interior. (See page 30 for the regional map.)

**Figure 25. Serious and Fatal Firearm Injuries by Region, Age 0-19, 1994-1998, N=267**

Region	# Serious (Non-Fatal Hospitalized)	# Fatal	# Total	Population (5 years, 94-98)	Rate/100,000 Youth
Anchorage	56	43	99	419,216	24
Interior (Rural)	6	9	15	26,590	56
Fairbanks NSB	12	8	20	142,623	14
Kenai Peninsula	4	4	8	79,737	10
Norton Sound	10	10	18	19,043	95
Yukon-Kuskokwim	30	17	47	51,006	92
Bristol Bay	2	2	4	15,197	*
Southeast	10	5	15	115,582	13
Kodiak	1	1	2	25,300	*
Aleutian/Pribilofs	0	1	1	12,260	*
Copper River/PWS	0	3	3	16,569	18
Mat-Su Borough	10	5	15	90,938	10
North Slope	10	8	18	14,994	120
Northwest Arctic	10	2	12	15,507	77
<b>Total</b>	<b>155</b>	<b>112</b>	<b>267</b>	<b>1,044,562</b>	<b>24</b>
Average Per Year	(31)	(22.4)	(53.4)	(208,912)	(24)

\*Rates are not calculated for fewer than five events since the addition or deletion of a few events can dramatically affect the size of the rate. These small numbers produce rates that are unstable and inherently unreliable.

## FIREARM INJURIES

Figure 26 includes only the Alaska Trauma Registry firearm injury cases, and shows the presence or absence of alcohol or illicit drug involvement as recorded in the hospital medical record.

**Figure 26. Serious and Fatal Firearm Injuries by Substance Abuse, Age 0-19, 1994-1998, N=176\***

Intent	No Alcohol/Drug	Alcohol Only	Other Drug Only	Both	Totals
Unintentional	64	7	2	3	76
Suicide	25	10	3	2	40
Homicide/Assault	28	4	11	4	47
Legal Intervention	0	1	0	0	1
Intent Unknown	9	0	1	2	12
<b>Total</b>	<b>126</b>	<b>22</b>	<b>17</b>	<b>11</b>	<b>176</b>

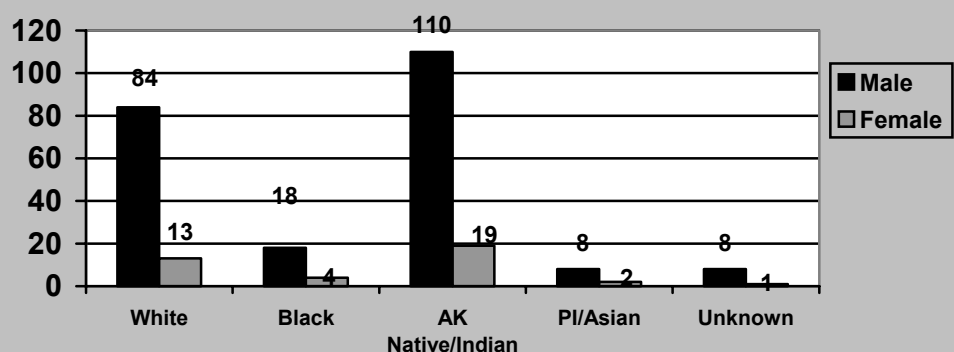
\*Source: Alaska Trauma Registry, out-of-hospital deaths not included.

Note: Alcohol or Illicit Drug Involvement, in this study, relates only to the patient. In many instances, someone else pulled the trigger, but the Trauma Registry generally does not record information on others who may have been involved in the incident.

Figure 27 shows the distribution of firearm injuries by gender and race. Although Alaska Natives represented about 22% of the study population during the five year study period, they accounted for 48.3% of the serious and fatal firearm injuries.

From 1994-1998, male children and youth in Alaska were nearly six times more likely of being seriously injured or killed by firearms than female children and youth.

**Figure 27. Serious and Fatal Firearm Injuries by Race and Gender, 1994-1998, N=267**



In *Serious and Fatal Firearm Injuries Among Children and Adolescents in Alaska: 1991-1997*, data was reviewed from the 1996 Alaska Behavioral Risk Factor Surveillance Survey (BRFSS) showing what percent of Alaskans reported having loaded unlocked firearms in or around the home, and what percent of them also had children under 18 years of age living in the home.

Overall, 59.9% of adults reported having firearms in or around the house (Figure 28). Since the 95% confidence intervals for males and females overlap, men and women were equally likely to report having firearms in or around the house. Figure 29 shows the percentage of adults who reported having loaded unlocked firearms in or around the house. Figure 30 shows the percentage of adults who reported at least one firearm was kept loaded and unlocked in or around the house, and also reported children (<18 years old) living in the house. Of the adults who reported having loaded, unlocked firearms in the house, 2.6% also had children under age 18 living in the house.

**Figure 28. Prevalence of Alaskan Adults Reporting Firearms In or Around the House, 1996**

	N <sup>a</sup>	Percent <sup>b</sup> Reporting Firearms	Weighted N <sup>c</sup>	95% Confidence Interval
Male	508	63.1%	143,952	(57.5, 68.6)
Female	476	56.3%	116,109	(51.2, 61.4)
Total	984	59.9%	260,061	(56.1, 63.6)

<sup>a</sup> N = the number of survey respondents in this demographic subgroup.

<sup>b</sup> Percent = the weighted (adjusted) percentage, based on the survey data.

<sup>c</sup> Weighted N = the weighted sample number, generalized to 1996 intercensal population estimates for Alaska.

**Figure 29. Prevalence of Alaskan Adults Reporting Firearms in or Around the House and at Least One Firearm is Kept Loaded and Unlocked, 1996**

	N <sup>a</sup>	Percent <sup>b</sup> Reporting Firearms	Weighted N <sup>c</sup>	95% Confidence Interval
Male	128	15.7%	35,920	11.9, 19.5
Female	52	6.8%	13,991	4.1, 9.5
Total	180	11.5%	49,911	9.1, 13.9

<sup>a</sup> N = the number of survey respondents in this demographic subgroup.

<sup>b</sup> Percent = the weighted (adjusted) percentage, based on the survey data.

<sup>c</sup> Weighted N = the weighted sample number, generalized to 1996 intercensal population estimates for Alaska.

**Figure 30. Prevalence of Alaskan Adults Reporting at Least One Firearm is Kept Loaded and Unlocked in or Around the House and Have Children Living in the House**

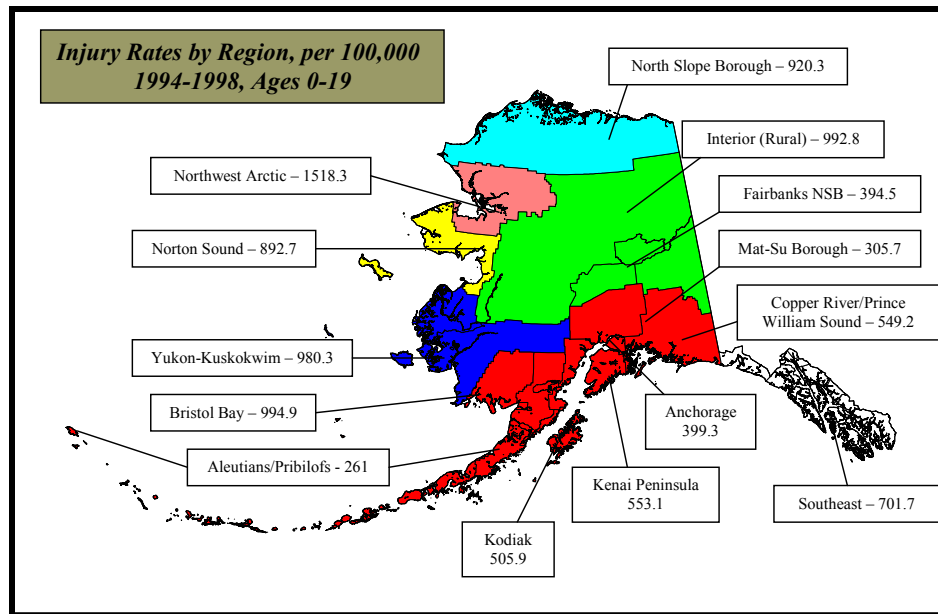
	N <sup>a</sup>	Percent <sup>b</sup> Reporting Loaded Unlocked Firearms and Children in the House	Weighted N <sup>c</sup>	95% Confidence Interval
Total	45	2.6%	11,320	.4, 4.8

<sup>a</sup> N = the number of survey respondents in this demographic subgroup.

<sup>b</sup> Percent = the weighted (adjusted) percentage, based on the survey data.

<sup>c</sup> Weighted N = the weighted sample number, generalized to 1996 intercensal population estimates for Alaska.

## INJURY BY REGION



Community-based injury prevention begins with regional data. The examples below illustrate the regional variance in serious child injury. Only those with a frequency of 5 or above and which represented at least 5% of the total were included in the tables. Complete data tables for the fourteen EMS regions and sub-regions are available upon request.

### REGION

### MAJOR INJURY CATEGORIES

		Number	Percent
<b>Aleutians/Pribilof Sub-Region</b>			
(32 Injuries)			
Falls	9	28%	
Suicidal	5	15%	
Other	18	57%	

		Number	Percent
<b>Anchorage Sub-Region</b>			
(1,674 Injuries)			
Falls	371	22%	
Motor Vehicle	196	12%	
Suicidal	186	11%	
Assault	134	8%	
Bicycle	95	6%	
Other	692	41%	

REGION	MAJOR INJURY CATEGORIES		
--------	-------------------------	--	--

		Number	Percent
<b>Bristol Bay Sub-Region</b> (127 Injuries)	Falls	23	18%
	ATV	20	16%
	Suicidal	13	10%
	Motor Vehicle	12	9%
	Snow Machine	8	6%
	Other	51	41%

		Number	Percent
<b>Fairbanks NSB Sub-Region</b> (562 Injuries)	Suicidal	103	18%
	Falls	84	15%
	Motor Vehicle	79	14%
	Sports	40	7%
	Poisoning	36	6%
	Other	220	40%

		Number	Percent
<b>Interior Region (Rural)</b> (264 Injuries)	Suicidal	46	17%
	Falls	40	15%
	Motor Vehicle	36	14%
	Snow Machine	18	7%
	Sports	15	6%
	Other	109	41%

		Number	Percent
<b>Kenai Peninsula Sub-Region</b> (441 Injuries)	Falls	96	22%
	Motor Vehicle	80	18%
	Suicidal	44	10%
	ATV	22	5%
	Sports	21	5%
	Other	178	40%



## INJURY BY REGION

### REGION MAJOR INJURY CATEGORIES

		Number	Percent
<b>Kodiak Island Sub-Region</b> (128 Injuries)	Falls	28	22%
	Suicidal	23	18%
	ATV	12	9%
	Motor Vehicle	10	8%
	Playground	9	7%
	Other	46	36%

		Number	Percent
<b>Mat-Su Borough Sub-Region</b> (481 Injuries)	Motor Vehicle	127	26%
	Falls	68	14%
	Suicidal	44	9%
	Other	242	36%

		Number	Percent
<b>Northwest Arctic Region</b> (237 Injuries)	Suicidal	54	23%
	Falls	27	11%
	ATV	24	10%
	Snow Machine	14	6%
	Cut	12	5%
	Other	106	45%

		Number	Percent
<b>North Slope Borough Region</b> (138 Injuries)	Falls	20	14%
	ATV	16	12%
	Suicidal	15	11%
	Snow Machine	13	9%
	Pedestrian	10	7%
	Other	64	47%

**REGION****MAJOR INJURY CATEGORIES**

		Number	Percent
<b>Norton Sound Region</b>			
(170 Injuries)			
	Suicidal	35	21%
	Falls	25	15%
	ATV	14	8%
	Motor Vehicle	14	8%
	Snow Machine	9	5%
	Sports	9	5%
	Other	64	38%

		Number	Percent
<b>Prince William Sound Sub-Region</b>			
(91 Injuries)			
	Falls	19	21%
	Motor Vehicle	17	19%
	Bicycle	9	10%
	Snow Machine	7	8%
	ATV	5	5%
	Suicidal	5	5%
	Other	29	32%

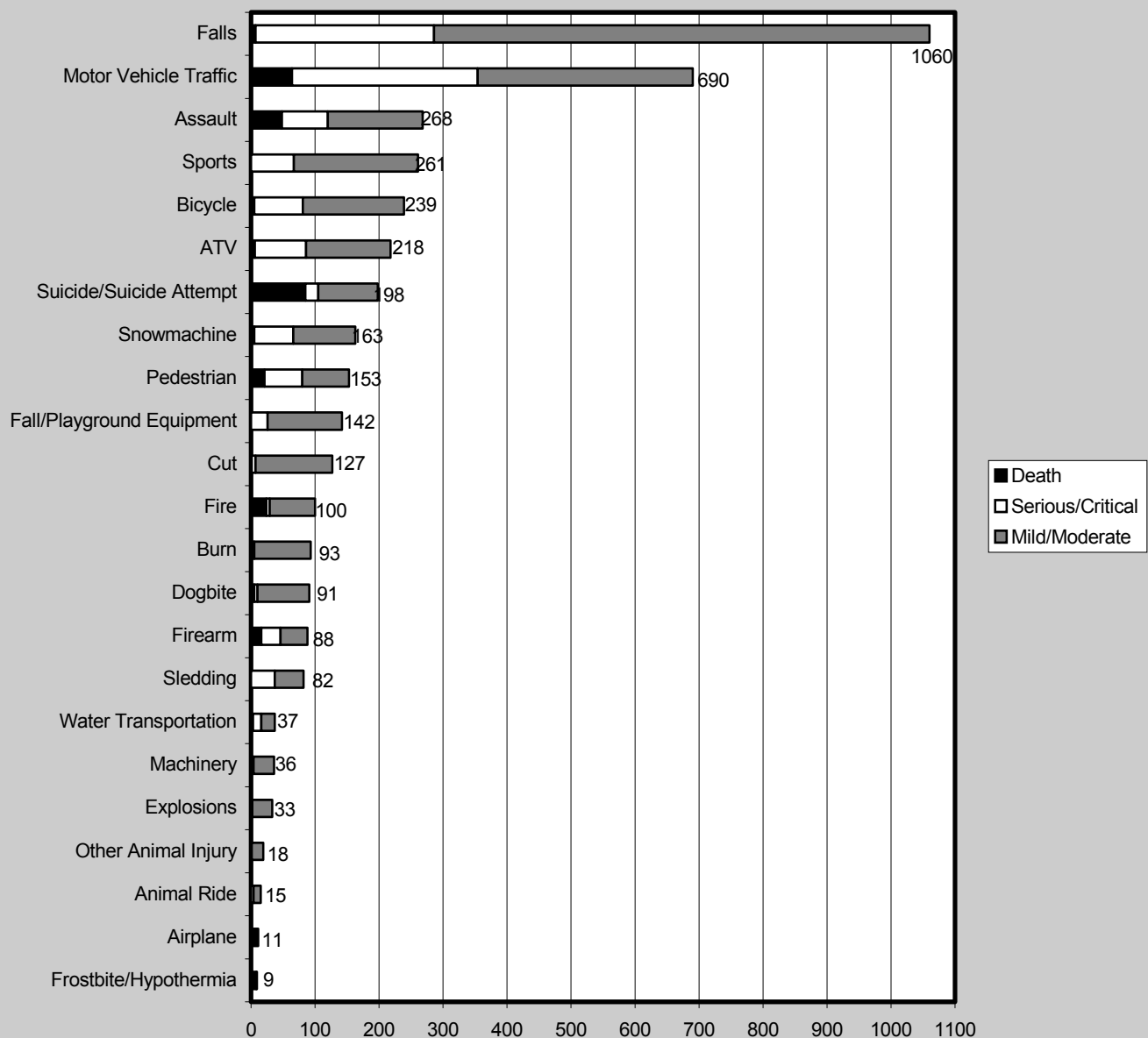
		Number	Percent
<b>Southeast Region</b>			
(811 Injuries)			
	Falls	190	23%
	Suicidal	103	13%
	Motor Vehicle	98	12%
	Sports	59	7%
	Bicycle	40	5%
	Other	321	40%

		Number	Percent
<b>Yukon-Kuskokwim Region</b>			
(500 Injuries)			
	Suicidal	94	19%
	Falls	88	18%
	Snow machine	31	6%
	Other	308	57%

## INJURY SEVERITY

Injury Severity is examined using the **Abbreviated Injury Scale**. Figure 31 shows the severity of each injury: AIS = 1 or 2 (mild to moderate); AIS = 3, 4, 5 (serious to critical); and, death. The injuries are ordered by frequency; however, the most common injuries were not always those with the most serious consequences. The leading causes of injury fatality shown in Figure 32 were suicide, motor vehicle traffic crashes, homicide, and fire. The non-fatal injuries that most often fell into the category of serious, severe, and critical were motor vehicle traffic crashes, falls, off-road vehicle crashes, bicycle, assault, snow machine crashes, sports injuries, and pedestrian injuries. Those injuries that do not result from traumatic impact (drowning, suffocation, and poisoning) are not included here because AIS scores are not applicable.

Figure 31. Alaska Statewide, 1994-1998, Age 0-19, Injury Severity



**Figure 32. Injury Severity Distribution, Age 0-19, 1994-1998**

	DEATH	SERIOUS/CRITICAL	MILD/MODERATE	TOTAL
Falls	7	279	774	1060
Motor Vehicle Traffic	64	290	336	690
Assault	48	72	148	268
Sports	0	67	194	261
Bicycle	5	76	158	239
ATV	6	80	132	218
Suicide/Suicide Attempt	85	20	93	198
Snow machine	5	61	97	163
Pedestrian	21	59	73	153
Fall/Playground Equipment	0	26	116	142
Cut	1	6	120	127
Fire	24	5	71	100
Burn	2	3	88	93
Dog bite	5	5	81	91
Firearm	16	30	42	88
Sledding	0	37	45	82
Water Transportation	3	13	21	37
Machinery	2	2	32	36
Explosions	0	2	31	33
Other Animal Injury	0	1	18	19
Animal Ride	0	4	11	15
Airplane	11	0	0	11
Frostbite/Hypothermia	8	0	1	9

## INJURY COSTS

The cost of injury in terms of pain, suffering, and grieving is immense and immeasurable. The financial cost can be calculated, or at best estimated, and remains an essential element of the ongoing discussion of rising health care costs and competing health care dollars. Most of the health costs of injuries - in medical and hospital care, time lost from school or work, hospitalization, and disability - result from non-fatal injuries.

It is estimated that from 1994-1998, non-fatal injuries to Alaska's children and teens cost over \$51 million in hospital charges alone. The average hospital charge per patient (ages 0-19) from 1994-1998 was about \$9,700.

*Not included in these numbers are: ambulance service fees, physician fees, rehabilitation, long-term care, and other indirect costs.*

Injuries resulting from motor vehicle crashes and firearms were the most costly, resulting in approximately \$18,000 in hospital charges per patient. Burn injuries were also very expensive, at an estimated cost of \$11,000 per patient in hospital charges.

From 1994-1998, motor vehicle crash injuries to children 0-19 years cost an estimated \$21 million in hospital charges alone. The estimated costs of firearm and burn injury hospitalizations added up to over \$5 million.

Figure 33 shows the percentage of injury patients billing the most common payers for their hospital charges, or who were uninsured.

**Figure 33. Percentage of All Hospitalized Injuries By Payer  
(fatal and non-fatal)  
Age 0-19, N=5457**

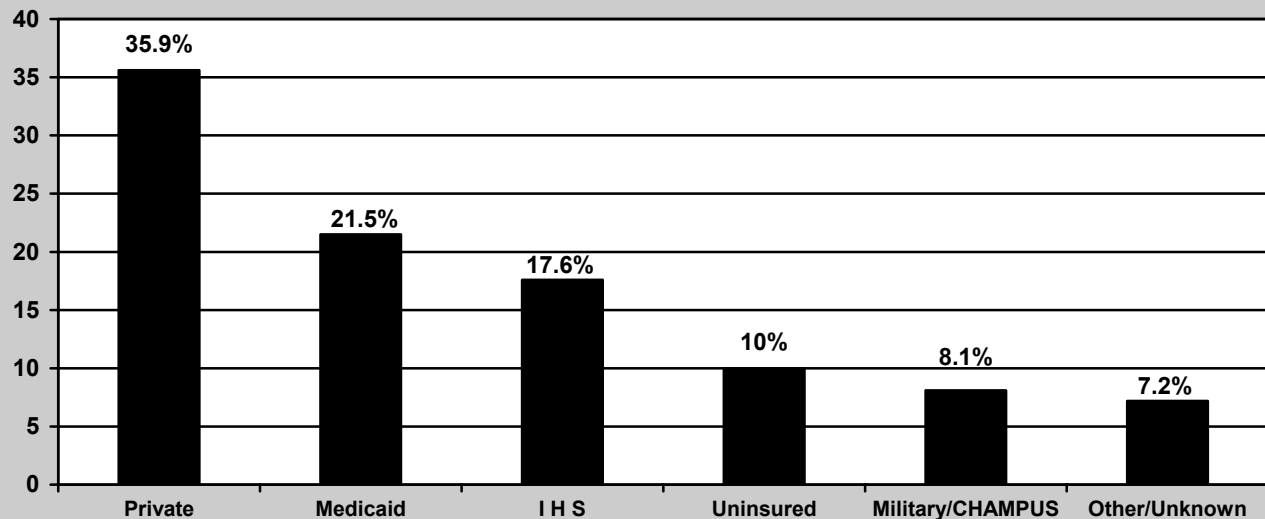


Figure 34 describes a few of the injuries that occurred among Alaskan children birth through age 19 during the years 1994 through 1998.

<b>Figure 34. EXAMPLES OF COSTLY INJURY HOSPITALIZATIONS</b>				
<b>Patient Age</b>	<b>Injury Event Description</b>	<b>Length of Hospital Stay</b>	<b>Hospital Charges</b>	<b>Billed to:</b>
18 yrs.	Pedestrian backed over by pickup truck.	82 days	\$550,000+	Private Insurer
12 yrs.	Riding dirt bike & hit by truck	56 days	\$200,000+	Uninsured
12 yrs.	Passenger in high-speed single car rollover, no seat belt, alcohol involved.	33 days	\$180,000+	Uninsured
16 yrs.	Lost control skiing, ran into chairlift pole coming down hill	8 days	\$150,000+	Private Insurer
15 yrs.	Passenger in vehicle struck by moving train.	28 days	\$140,000+	Private Insurer
4 yrs.	Playing with matches & candle, lit shirt on fire.	38 days	\$120,000+	Medicaid
5 yrs.	Bicycle rider, not wearing helmet, struck by motorcycle.	33 days	\$100,000+	Uninsured

Injury prevention is a good investment. According to the Association of State and Territorial Directors of Health Promotion and Public Health Education:

- **Every \$1 spent on bicycle helmets saves society \$30.**
- **Every \$1 spent on child safety seats saves society \$32.**
- **Every \$1 spent on smoke detectors saves society \$65.**

# INJURY PREVENTION

The good news is that injuries, especially unintentional injuries, are chiefly preventable. The Alaska Injury Surveillance and Prevention Program (ISAPP) has adopted the State and Territorial Injury Prevention Directors Association (STIPDA) model for a state injury prevention program. This model consists of the following five core components:

## I. Data Collection and Analysis

Alaska has an excellent injury data collection system, including these resources: Alaska Bureau of Vital Statistics; the Alaska Trauma Registry; the Fatality Analysis Reporting System; Traffic Accident Data; the Behavioral Risk Factor Surveillance System; the Medical Examiner Database; and the Child Fatality Review Team. All injury prevention efforts begin by looking at the numbers -- what injuries are occurring, when, where, how, why, and to whom.

## II. Program Design, Implementation, and Evaluation

Effective injury prevention involves choosing programs with proven effectiveness and carefully evaluating all aspects of the program. Injury prevention programs fall under three major categories:

***Environment*** includes product design or adapting the surroundings to reduce injuries. Motor vehicle design, air bags, playground equipment, smoke alarms, trigger locks and safes, and child-proof packaging are examples of this most effective approach to injury prevention; for example, a working smoke alarm can reduce the risk of death in a house fire by about 50%.

***Enforcement*** refers to safety laws and the enforcement of those laws to compel people to exercise safe behavior. For example, states with primary seat belt laws averaged higher belt use (17 percentage points), than did states with secondary laws. In Alaska, this could save an estimated 10 lives per year. Motorcycle helmets reduce the likelihood of a fatality by 29% in a crash, and helmet laws typically increase helmet use to 100%. Bicycle helmets are 85-88 percent effective in mitigating head and brain injuries.

***Education*** is the most challenging approach to reducing injuries because it relies on changing people's beliefs and behaviors. However, it does work incrementally and over time. Examples are the "don't drink and drive" message, or the "back to sleep" campaign which has been shown to decrease the incidence of SIDS by nearly 50% in some areas. Use of safety belts, child safety seats, helmets and personal flotation devices are all examples of behaviors with proven effectiveness in preventing injury or death.





### III. Coordination and Collaboration

Partnerships with other key agencies avoids duplicity and inconsistency. In Alaska, these agencies include but are not limited to: the Sections of the Division of Public Health; the Division of Mental Health and Developmental Disabilities; the Division of Alcohol and Drug Abuse; the Department of Public Safety; the Highway Safety Office; the Alaska Injury Prevention Center; the Seventeenth U.S. Coast Guard District; the State Office of Boating Safety; Alaska Safe Kids Coalitions and Chapters; the Alaska Safe Communities coalitions; the Alaska Marine Safety Education Association; the National Institute of Occupational Safety and Health, Alaska Field Office; State Fire Marshal's Office; Denali Safety Council; and the Alaska Native Tribal Health Consortium and Native Health Corporation Injury Prevention Programs.



### IV. Technical Support and Training

Maintaining a trained and experienced injury prevention workforce is key to developing and implementing effective programs. This workforce begins with the injury prevention specialists and extends to all healthcare providers in the state who seek to improve the health and life expectancy of their clients.

### V. Public Policy

Injury prevention specialists can influence public policy by providing scientific target groups, examples of policy interventions that have been shown to reduce the risk of injury, or even model legislation. (*Safe States: Five Components of a Model State Injury Prevention Program and Three Phases of Program Development*, STIPDA, October, 1997).

Health and Social Services Commissioner Jay A. Livey has said that  
***“Injury is one of the greatest threats to the health of Alaska’s children and youth today.  
With a united effort, this epidemic can be controlled.”***

## INJURY PREVENTION

The following describes the conception and development of a model injury prevention program, which began as a grass roots effort in a small Alaskan community in response to a local problem, and spread across the state and beyond. It is the ***“Kids Don’t Float”*** program.

In January of 1996, CHEMS announced the availability of mini-grants for the design and implementation of injury prevention projects. The request for proposals included a draft of the document *Serious and Fatal Child and Adolescent Injuries in Alaska, 1991-1994*, and the requirement that the proposed project be supported by these or other injury data. The injury prevention program that the applicant chose to develop had to target a documented injury problem in the area. The funding source for these grants was through the Emergency Medical Services for Children (Health Resources and Services Administration) program. Sixteen agencies were awarded grants, of up to \$15,000 per project.

In the *Serious and Fatal Child and Adolescent Injuries in Alaska, 1991-1994* document, drowning was listed as the second leading cause of accidental death for children and youth under age 20 in Alaska. There were 37 fatalities, or about nine per year, in the four years of the study. The drowning fatality rate for youth under age 20 in Alaska was over twice the national average.

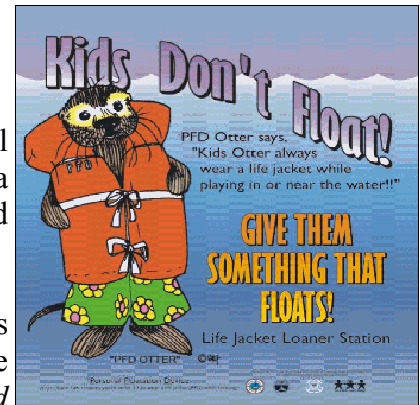


The Coast Guard's Boating Safety Office had excellent data on recreational boating fatalities in Alaska. Their data included these facts: most of the fatalities occurred in open skiffs or canoes; over half of Alaska's drownings occurred in lakes and rivers; 22% of boating fatalities were 18 and under; and over 90% of fatality victims did not wear a life jacket.

Bob Painter, in Homer, Alaska, knew of two children who had drowned near Homer in a 5-year period. For a population of about 4,000, two is significant, as well as personal. At the time, Bob was the Assistant Fire Chief of the Homer Fire Department. He proposed a project for funding that he called "Kids Don't Float". It was named after a successful program in New York City called "Kids Don't Fly", to prevent children from falling out of windows. The proposed Alaskan Kids Don't Float project consisted of life jacket loaner boards at the harbors and water safety education.

This project was a the product of collaboration among local groups – the Homer Fire Department, Homer Safe Kids, the Coast Guard Auxiliary, and the Homer School District. Beginning in the spring of 1996, these groups erected 15 loaner boards in communities around Katchemak Bay that year.

At the Statewide EMS Symposium in November 1996, Bob Painter presented the Kids Don't Float project and as a result of that presentation a group was organized, under the leadership of CHEMS and the Coast Guard Boating Safety Office, to explore the possibility of reproducing the loaner board component of the program in other Alaskan communities. The important stepping stones on the way to reaching this goal were: writing a manual with guidance for finding a sponsor and building a board; locating funds and purchasing life jackets; contracting with a vendor who could make a loaner board sign in the form of a giant bumper sticker, so that they could easily be sent through the mail; and, publicizing the program which eventually led to the development of a newsletter and a web site.



The project took off.

Now, five years later, there are 254 Kids Don't Float loaner board sites by lakes, rivers, and bays in virtually every region of the state. Kids Don't Float has truly been a collaborative effort, not only at the State level, but in the communities where each of these loaner boards are built, maintained, and advertised.



Annette Edwards (second from the left) single-handedly organized signs to be erected at 12 lakes in the Matanuska-Susitna Borough in 1998. She was inspired and motivated by the drowning death of her son's best friend at Finger Lake.

Chris Husberg (right) built a loaner board sign at Cheney Lake in Anchorage for his Eagle Scout project, and drew up building plans that are included in the instructional manual.



In 1997-1998 Kathy O'Gara, Injury Prevention Specialist for the Southeast Alaska Native Health Corporation, evaluated the effectiveness of the presence of a life jacket loaner board in promoting life jacket use. She found that the observed wear rate went from 16% to 35% (a more than 100% increase) in the community after the board was erected, compared with no increase in the control community.



The success of this project can also be measured in lives saved. A ten year old Kotzebue boy was playing near the sound when his good friend was swept into deeper water by the current. Neither child could swim, but the boy bravely grabbed one of the Kids Don't Float life jackets and doggie-paddled out to his friend and pulled her to shore. There were three other possible saves that have been reported. Two children wearing KDF jackets survived a boating accident on the Kenai River. A child fell off the dock in Klawock, and his friends acted quickly by throwing him a KDF life jacket until he could be rescued.

The KDF program became a prominent component of the Alaska Boating Safety Bill and was frequently mentioned in testimony by those supporting the bill. The law was passed by the Alaska Legislature in May of 2000, and with the legislation came funding for more boards and more life jackets.

The National Safe Boating Council and National Safe Kids have both adopted this program for national promotion. CHEMS has gotten calls from South Dakota, New Mexico, and San Antonio, TX, for assistance in starting this program in their areas. National recognition is gratifying, but the real reward, of course, is having Alaska's children and youth don life jackets whenever they go out on the water.





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